MRI detects more tumours than mammograms in high-risk women with a genetic predisposition to breast cancer

Women with a family history of cancer could be better off replacing their annual mammogram with a magnetic resonance imaging (MRI) scan.

This is the conclusion of a landmark Dutch study recently published in the *New England Journal of Medicine*, which showed that MRI is a more effective screening method than mammography for early detection of tumours in women at high risk of developing breast cancer.

High-risk women are defined as those who have a 15% or greater threat of developing breast cancer during their lifetime, because of a genetic mutation or inherited susceptibility.

Over 1 900 women participated in the 4-year study, which compared the effectiveness of clinical breast examinations, mammography, and MRI scans. The women, who ranged in age from 19 to 70, had to have a family history of breast cancer in order to qualify for the study. The average age of enrolling participants was 40. The study is the largest of its kind. All the patients received annual mammograms and MRI scans in addition to standard physical examinations.

The sensitivity of clinical breast examinations, mammography, and MRI for detecting invasive breast cancer were 17.9%, 33%, and 79.5% respectively.

Overall, 32 breast cancers were found by MRI (22 of which were not visible on mammography), whereas 13 were missed by MRI, 8 of which were visible on mammography. Mammographic screening detected 18 of 45 tumours (10 of which were also visible on MRI). Of the 27 tumours that did not show up on the mammogram, 22 were visible using MRI. Both screening methods proved more effective at detection than a clinical breast examination.

The stage of detection of breast cancers by MRI was favourable, with 11 of 19 invasive tumours smaller than 10 mm and only 1 associated with a positive node. Early identification of tumours allows doctors and patients to access a greater range of treatment options and significantly improves the patient's odds of beating the disease.

Dr Richard Tuft, president of the Radiological Society of South Africa (RSSA) said that one of the reasons for the effectiveness of MRI as a screening tool for high-risk women was that MRI imaging was not affected by the density of breast tissue.

'Breast tissue is denser in young women, and this makes it difficult for a mammogram to detect tumours in women younger than 40. However, MRI is not affected by tissue density, and so is an excellent screening tool for women at high risk of getting breast cancer,' he said.

Unfortunately, the greater sensitivity of MRI also yields more false alarms as it pinpoints areas of uncertainty that require further investigation by examination and biopsy, but ultimately prove not to be cancerous.

Dr Tuft cautioned against abandoning mammography for general screening in favour of the more expensive MRI for women without a family history or other high risk factors. Women at risk for breast cancer should enter an MRI screening programme at an age 5 years younger than the age at which a diagnosis was made on a family member or at the age of 30.

'Mammography is still the preferred tool for screening most women starting at age 40. The results of the study indicate that the two screening technologies are complementary,' he said.

Women with a family history of cancer often resort to preventive mastectomies to save their lives. The earlier detecting capabilities of MRI may help to prevent such a drastic decision and allow conservative surgery.

Issued on behalf of the **Radiological Society of South Africa by Health DiRxions.** For further information, contact Laura Boon on (011) 658-1581.